

# Upgrading Firmware

Using HP Web Jetadmin

whitepaper



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## Overview

HP Web Jetadmin has the ability to upgrade the firmware of HP Jetdirect devices over the network as well as the firmware of many newer models of printers. Upgrades to firmware can correct problems with devices and/or add new features to devices without replacing hardware. The ability to upgrade HP Jetdirect firmware over the network has always been available through a separate utility called the HP Download Manager. However, this requires a separate utility to be loaded for each operating system. The integrated firmware downloader in HP Web Jetadmin can upgrade firmware on any platform, without the aid of a separate download utility, and can automatically locate the latest firmware revision on the web. Alternate techniques for upgrading HP Jetdirect firmware will also be covered in this document.

## Proxy Settings

HP Web Jetadmin can automatically obtain newer firmware images on-the-fly from the web before performing a firmware upgrade. Naturally, this saves enormous amounts of time over manually downloading images individually outside of HP Web Jetadmin. In order for HP Web Jetadmin to obtain these images from the Web, proxy settings must be defined.

To define proxy settings, select *General Settings, HTTP (web)* from the Navigation tree and view the *HTTP Proxy Settings* section (see Figure 1):

Check the *Allow HTTP Downloads* box to view options to configure. If a proxy server is used to gain access outside of the firewall, the *HTTP Proxy Server* address and *HTTP Proxy Port* number must be specified. These will typically be the same as the proxy information entered for the browser.

HP Web Jetadmin will attempt to use basic authentication to gain access to the internet through proxy servers and firewalls. In the case of secure proxy servers or firewalls, check the box titled *Use Proxy Authentication*, and enter a user name and password to be used as credentials to gain access to the internet. If HP Web Jetadmin is unsuccessful using these credentials, try browsing to the following pages on the web to manually download firmware images:

[www.hp.com/go/webjetadmin\\_firmware](http://www.hp.com/go/webjetadmin_firmware) for HP Jetdirect firmware  
<ftp://ftp.hp.com/pub/networking/software/pfirmware> for printer firmware

As long as the browser can traverse the security of the proxy server or firewall, firmware images can be manually downloaded for use by HP Web Jetadmin.

The HP Jetdirect firmware images that reside at the above URL are files with an extension of \*.dld. When manually downloading these files, they must be copied to the following subdirectory in order for HP Web Jetadmin to recognize them as HP Jetdirect firmware images and display them in a list to be selected for upgrades:

```
<drive>:\Program Files\HP Web Jetadmin\doc\plugins\hpjwja\firmware\jetdirect
```

The printer firmware images that reside at the above URL are files with an extension of \*.rff. When manually downloading these files, they must be copied to the following subdirectory in order for HP Web Jetadmin to recognize them as printer firmware images and display them in a list to be selected for upgrades:

```
<drive>:\Program Files\HP Web Jetadmin\doc\plugins\hpjwja\firmware\printer
```

## How Does It Work?

When the option is selected in HP Web Jetadmin to upgrade either HP Jetdirect firmware or printer firmware, the HP Web Jetadmin firmware downloader determines the current firmware revision installed on the device through SNMP queries. That revision is compared with any previously downloaded firmware images that may reside on the machine running HP Web Jetadmin. If a newer firmware revision exists, the firmware downloader can then download that image to the device. If a newer image does not exist, the administrator has the option to download a newer image directly from the web.

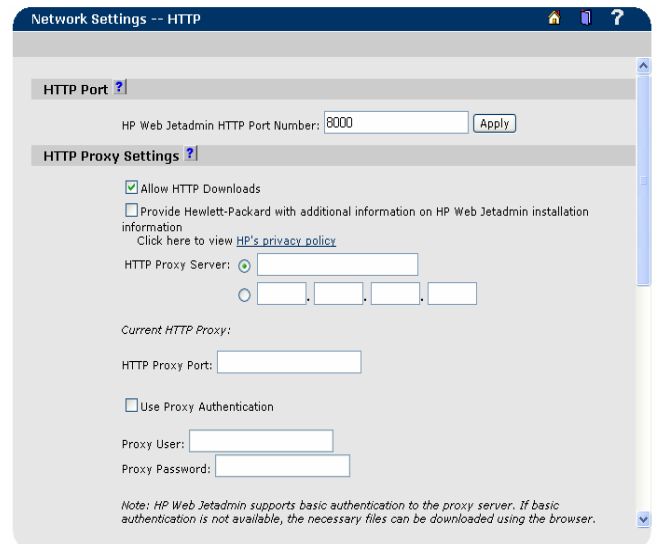


Figure 1 – Proxy Settings

Once a newer firmware image has been selected to download, the firmware downloader sends the firmware image to the device. This process is fully fault-tolerant. If the firmware upgrade process is interrupted for reasons such as a power outage, it can be fully recovered by running the firmware downloader again and reinitiating the download.

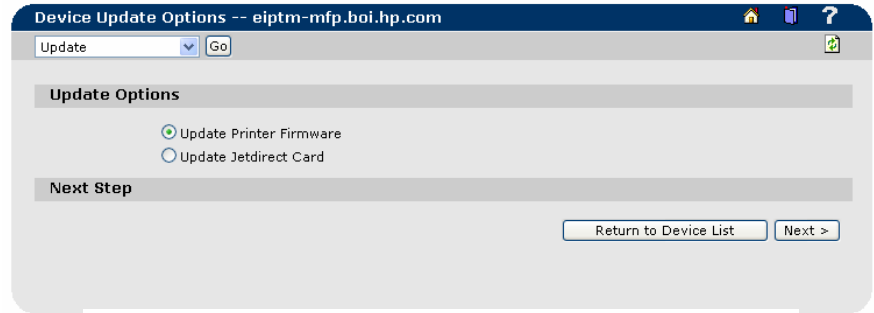


Figure 2 – Individual Firmware Update Selection

## Upgrading HP Jetdirect Firmware

### *Individual HP Jetdirect Device*

Upgrading firmware for an individual device from within HP Web Jetadmin is performed by selecting *Update* from the pull-down menu on the *Status* page of the device. If the printer is capable of a firmware upgrade, an option will be made available to select either the printer or the Jetdirect device (see Figure 3).

When the Jetdirect firmware upgrade is selected, a screen appears with several options (see Figure 2). The *Jetdirect Firmware Available on HP Web Jetadmin* section contains a list of firmware images that can be selected as upgrades for this particular HP Jetdirect device. This list contains firmware images that have previously been downloaded or copied onto the machine running HP Web Jetadmin. These images are stored under the following subdirectory:

```
<drive>:\Program Files\HP Web Jetadmin\doc\plugins\hpjwja\firmware\jetdirect
```

Each firmware image in this list has header information that includes items such as model, firmware version, etc. HP Web Jetadmin already knows the model and firmware version of the selected HP Jetdirect device through previous SNMP queries. Therefore, it is a simple matter of parsing the firmware images contained in the list for firmware revisions greater than the current version on the HP Jetdirect device.

If the *Jetdirect Firmware Available on HP Web Jetadmin* section indicates that there are no newer firmware images found, the *Jetdirect Firmware Files on the HP Web Site* section will list versions of firmware that can be immediately downloaded to HP Web Jetadmin to use to update the device. Highlight the desired version of firmware from the list and select the *Download to Web Jetadmin* button in the lower right corner of the screen to download the image into HP Web Jetadmin without having to leave the application itself. HP Web Jetadmin compares the list on

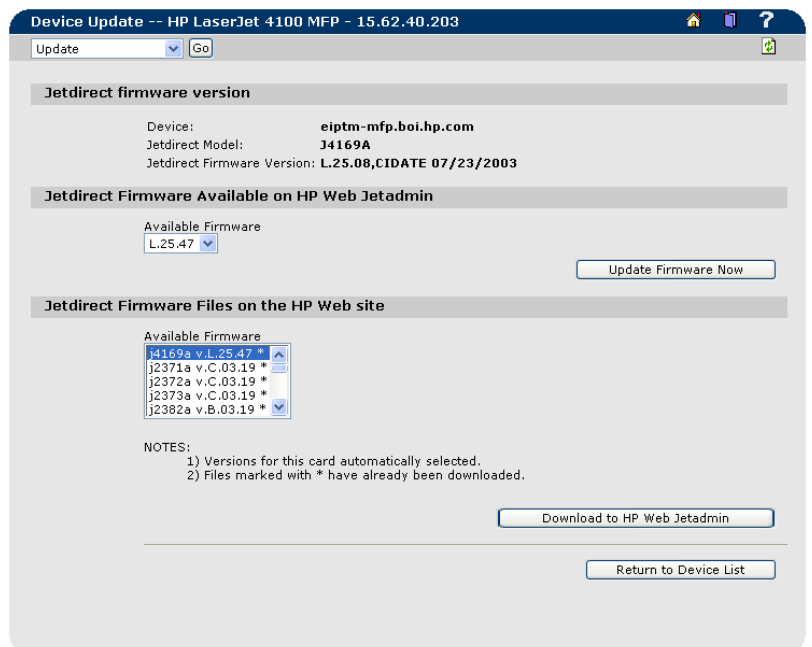


Figure 3 - Individual HP Jetdirect Firmware Upgrade

the web to what is already copied onto the HP Web Jetadmin machine and places an asterisk (\*) beside each image that is already installed (see Figure 3), making it easy to see which images are new.

Also, the latest copy of a file titled `firmware.glf` is copied to HP Web Jetadmin. This file is a text file that informs HP Web Jetadmin of exactly which firmware images are available on the web for each HP Jetdirect model, and exactly where to locate each image by URL. HP Web Jetadmin will use this file every time a web download is requested to obtain information on all firmware images available.

After the new firmware images are copied, the appropriate image can now be selected from the list, and the *Update Firmware* button can be clicked to initiate the HP Jetdirect firmware upgrade (see Figure 3).

#### Multiple HP Jetdirect Devices

HP Jetdirect firmware can also be upgraded from within HP Web Jetadmin for multiple devices simultaneously, saving precious time for the administrator.

When selecting *Update Jetdirect Firmware* from the *Device Tools* drop down menu while viewing the list of *All Devices*, or when selecting *Jetdirect Firmware Update* under *Tools, Multiple Firmware Update* in the Device Management navigation tree (see Figure 5), a list of devices appears from which to choose multiple devices for downloading HP Jetdirect firmware simultaneously (see Figure 4). A *Jetdirect Revision* column will indicate the current firmware on the Jetdirect device, while the *JetdirectFirmware Update* column will indicate any newer images that have been previously downloaded into HP Web Jetadmin. ). If a ">" symbol appears before the firmware version in the *Jetdirect Firmware Update* column,, that firmware version is newer than the version on the Jetdirect device. When the *Jetdirect Firmware Update* column is sorted, all of the devices that require an update will appear at the top of the list, making it easy to select them all and proceed with a firmware upgrade.

If a particular version of HP Jetdirect firmware is not appearing as available for upgrade for a particular device, select the *Get the Latest Firmware from the HP Web site* box.

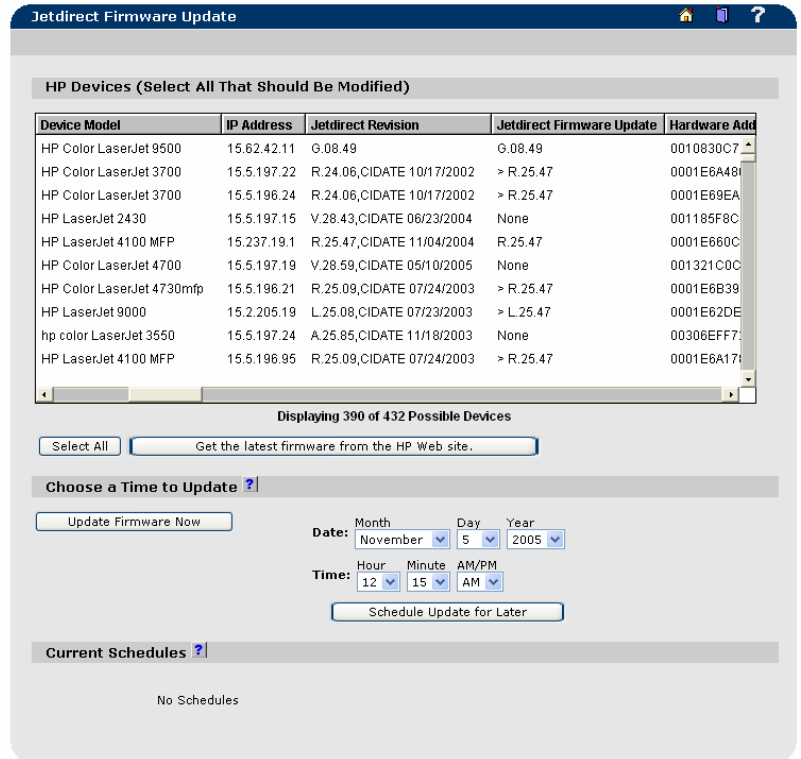


Figure 4 – Multiple HP Jetdirect Firmware Upgrade

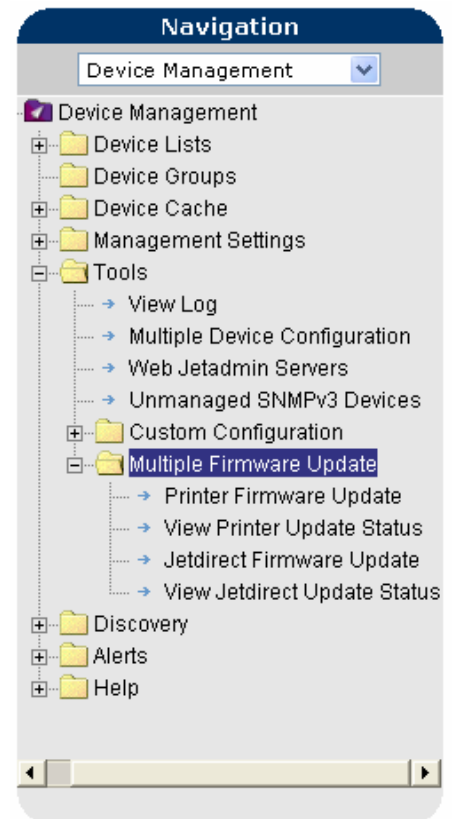


Figure 5 – Navigation Tree

A screen appears that contains a list of Jetdirect devices and the latest firmware versions available on the Web (see Figure 6). The file versions marked with an asterisk have already been downloaded into HP Web Jetadmin. Select all that are desired to download (using the SHIFT or CTRL keys on the keyboard when selecting), and click *Get Files*.

Once the firmware images are stored locally on the hard drive, they can be selected on the *Jetdirect Firmware Update* page to upgrade HP Jetdirect firmware on devices. Select all desired devices to update (using the CTRL or SHIFT keys on the keyboard when selecting) and click *Update Firmware Now* to start the upgrade process.

The section labeled *Choose a Time To Update* allows for scheduling the batch firmware upgrade to occur at any desired time. It might be desirable to initiate a firmware upgrade during non-peak hours when more network bandwidth may be available.

Once the batch upgrade process has begun, a results page will appear to inform the administrator of successes and/or failures. This same results screen can be accessed at a later date *under Tools, Multiple Firmware Update, View Jetdirect Update Status* in the *Navigation* tree.

## Upgrading Printer Firmware

### Individual Printer

Upgrading individual printer firmware is also available from within HP Web Jetadmin by selecting *Update* from the pull-down menu on the *Status* page of the device. If the printer is capable of a firmware upgrade, an option will be made available to select *Update Printer Firmware* (see Figure 3).

When the printer firmware upgrade is selected, a screen appears that displays all printer images that have previously been downloaded or copied to HP Web Jetadmin (see Figure 7). These images are stored under the following subdirectory:

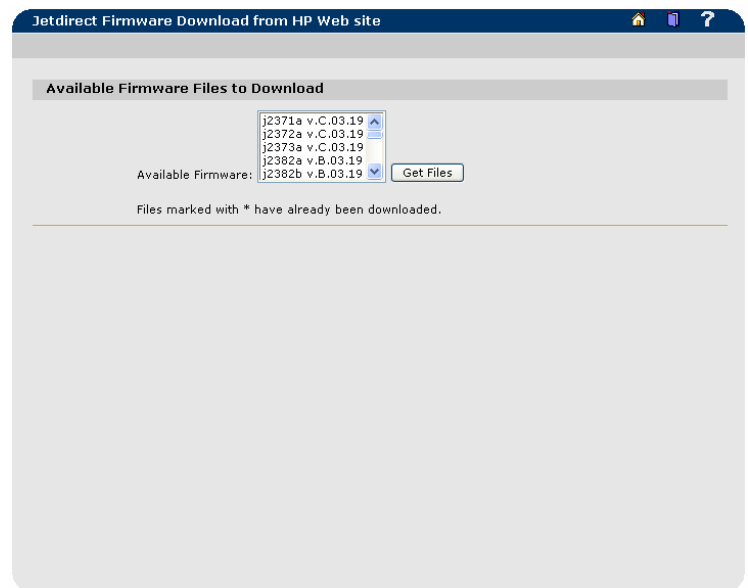


Figure 6 – HP Jetdirect Firmware Versions

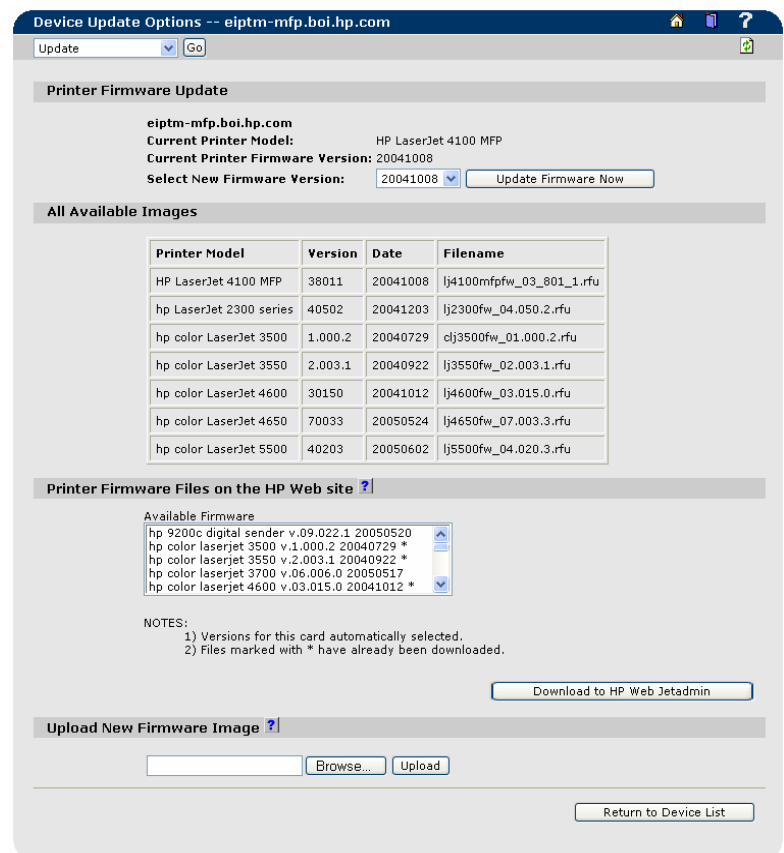


Figure 7 - Individual Printer Firmware Upgrade

<drive>:\Program Files\HP Web Jetadmin\doc\plugins\hpjwjal\firmware\printer

Each firmware image in this list has header information that includes items such as model, firmware version, date, etc. HP Web Jetadmin uses the date of the selected printer and compares it to the date of any previously downloaded firmware for the printer. If no newer images are available for the printer, images can be downloaded on-the-fly from the Web under the section titled *Printer Firmware Files on the HP Web Site* by selecting the desired image and clicking *Download to HP Web Jetadmin* (see Figure 7). Asterisks appear next to images that have been previously downloaded. Firmware images can also be manually uploaded by selecting *Browse* and *Upload* under *Upload New Firmware Image*.

### Multiple Printers

The ability to upgrade firmware on multiple printers simultaneously is also available in HP Web Jetadmin. This “batch” process is available by highlighting the desired devices and selecting *Update Printer Firmware* from the *Device Tools* drop down menu when viewing the list of all devices or a group. Printer firmware on multiple printers can also be upgraded by selecting *Printer Firmware Update* under *Tools, Multiple Firmware Update* in the Device Management navigation tree. A list of devices appears from which to choose multiple devices for downloading printer firmware simultaneously (see Figure 8). A *Firmware Version* column will indicate the current firmware on the printer, while the *Latest Firmware Revision* column will indicate any newer images that have been previously uploaded into HP Web Jetadmin. If a “>” symbol appears before the firmware version in the *Latest Firmware Revision* column, the firmware version is newer than the version on the printer. When the *Latest Firmware Revision* column is sorted, all of the devices that require an update will appear at the top of the list, making it easy to select them all and proceed with a firmware upgrade.

If a particular version of HP Jetdirect firmware is not appearing as

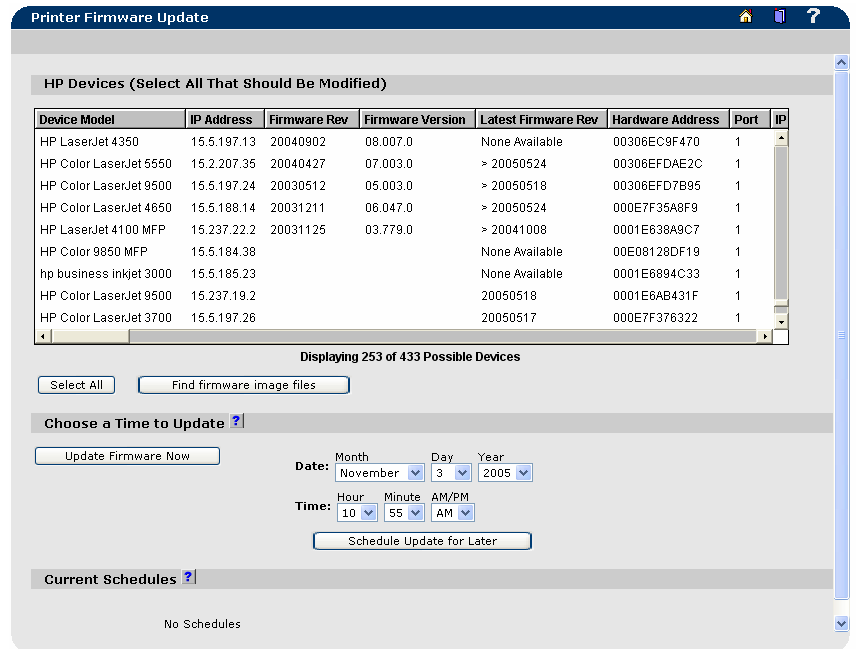


Figure 8 – Multiple Printer Firmware Upgrade

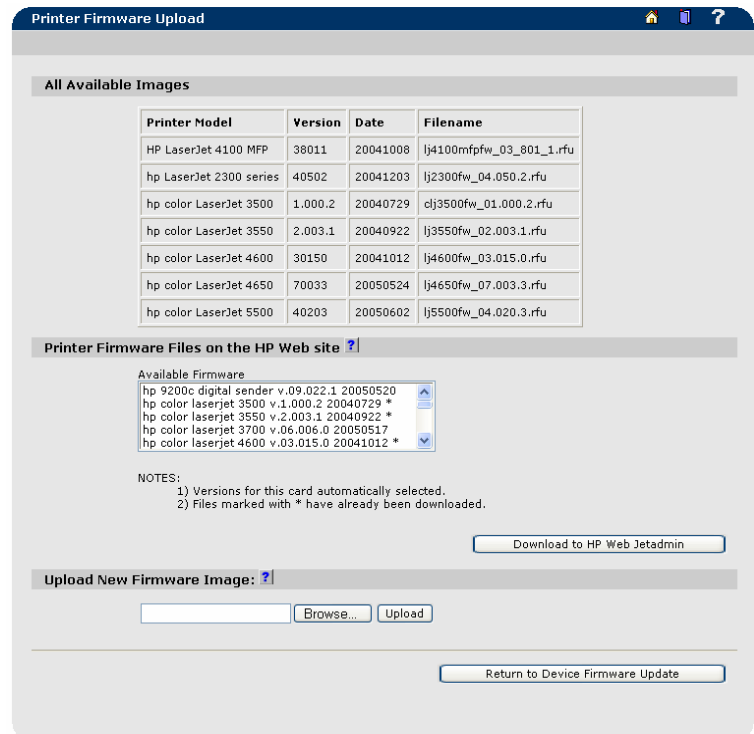


Figure 9 – Printer Firmware Selection

available for upgrade for a particular device, select the *Find firmware image files* box. Firmware images can be downloaded on-the-fly from the Web under the section titled *Printer Firmware Files on the HP Web Site* by selecting the desired image(s) and clicking *Download to HP Web Jetadmin* (see Figure 9). Multiple images can be selected by holding down the CTRL key on the keyboard.

Once the firmware images are stored locally on the hard drive, they can be selected on the *Printer Firmware Update* page to upgrade printer firmware. Select all desired devices to update (using the CTRL or SHIFT keys on the keyboard when selecting) and click *Update Firmware Now* to start the upgrade process.

The section labeled *Choose a Time to Update* allows for scheduling the batch firmware upgrade to occur at any desired time. It might be desirable to initiate a firmware upgrade during non-peak hours when more network bandwidth may be available.

Once the batch upgrade process has begun, a results page will appear to inform the administrator of successes and/or failures. This same results screen can be accessed at a later date *under Tools, Multiple Firmware Update, View Printer Update Status* in the navigation tree.

## Automatic retries

Firmware upgrade attempts on devices, either manual or scheduled, can be set to occur again automatically at a future time for those devices that fail. This eliminates the need to have to reselect all devices that failed and manually retry the upgrades. The number of retries can be set as well as the frequency of the retries by selecting *Management Settings, Network Settings, Firmware Upgrade* under the *Device Management* section of the navigation tree (see Figure 10).

## Concurrent Firmware Upgrades

It is possible to setup multiple threads to perform firmware upgrades in a parallel fashion rather than serially. Select *Management Settings, Network Settings, Firmware Upgrade* from the *Device Management* section of the Navigation tree and select the desired number of threads (see Figure 10). The default setting is to upgrade 8 devices simultaneously, but it can be expanded up to 128 possible devices. Firmware installation is faster when multiple devices are upgraded at the same time, but more network traffic is generated. Operating limitations may also restrict how many devices can be receive upgrades simultaneously.

## Supported Devices

HP Web Jetadmin will initially attempt to use TCP/IP to upgrade HP Jetdirect firmware. Older HP Jetdirect MIO cards with firmware revision 3.03 and 3.06 do not have a default SNMP Set Community Name upon which to issue an SNMP SET command. Unless the Set Community Name was set via TFTP, HP Web

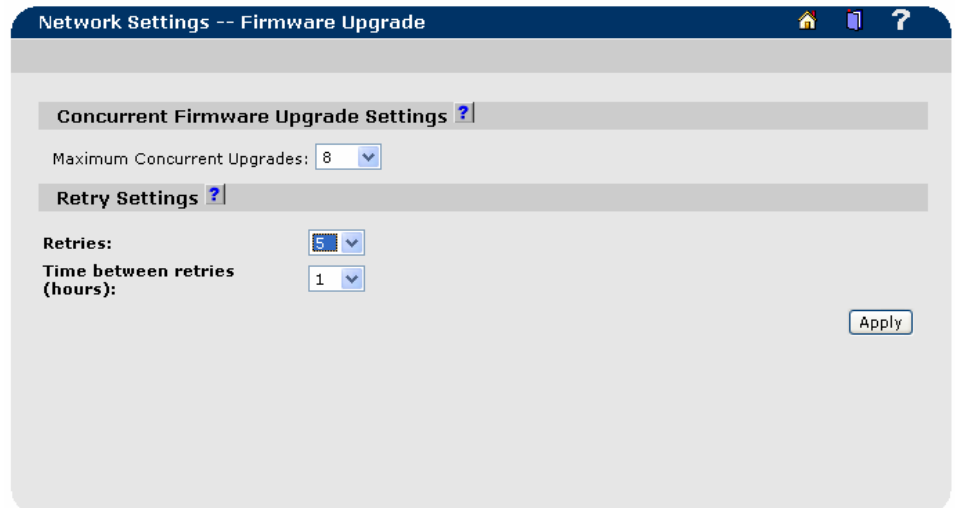


Figure 10 – Automatic Retries and Concurrent Upgrades

Jetadmin will not be able to successfully upgrade these cards via TCP/IP because the SNMP SET command will fail.

However, by disabling the TCP/IP protocol on the HP Jetdirect card via the printer front panel, HP Web Jetadmin will recognize that TCP/IP is disabled, and will attempt to use IPX/SPX to upgrade the firmware. As long as IPX/SPX is enabled on the HP Jetdirect card, this technique should succeed.

Therefore, virtually all HP Jetdirect devices can receive a firmware upgrade via HP Web Jetadmin, even if the devices do not support setting SNMP parameters via TCP/IP.

## Additional Firmware Upgrade Utilities

There are several alternate utilities that can be used in addition to HP Web Jetadmin to upgrade HP Jetdirect if so desired:

- HP Download Manager
- File Transfer Protocol (FTP)
- Embedded Web Server (EWS)

However, only certain HP Jetdirect models can be upgraded using FTP or the HP Jetdirect EWS.

## HP Download Manager

HP Download Manager is an application that allows network or system administrators to remotely update the firmware of upgradeable HP Jetdirect print servers on the network (see Figure 11). It can upgrade individual devices or many devices simultaneously. HP Download Manager can be run under Microsoft Windows® 98, ME, 2000, NT® 4.0, or XP operating systems. It supports the TCP/IP and Microsoft IPX network protocols.

HP Download Manager uses the same firmware image files (.dld) that HP Web Jetadmin uses to upgrade firmware. The images can be manually loaded into HP Download Manager or downloaded directly from the Web while in the utility.

Since HP Download Manager is very similar in functionality to the HP Web Jetadmin firmware upgrade feature, usage of either utility is strictly by preference. However, HP Download Manager may be used to attempt to recover HP Jetdirect cards that may have been placed in the short stack during an upgrade via HP Web Jetadmin, or vice-versa.

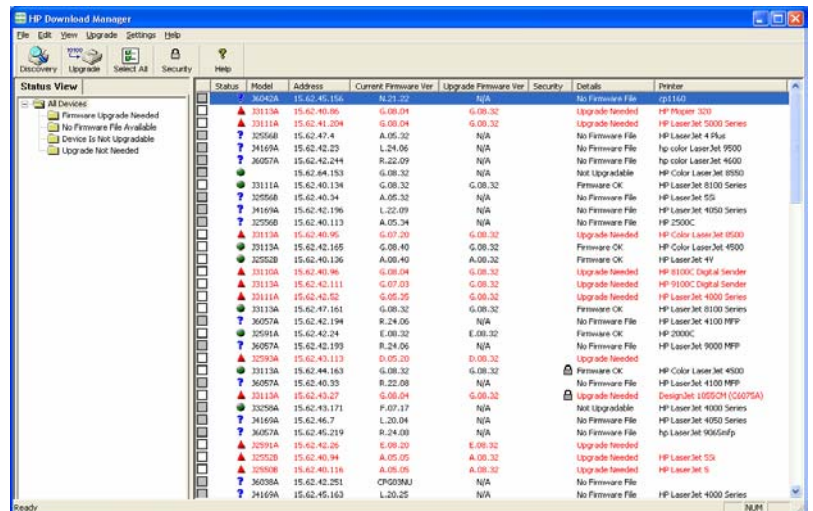


Figure 11 – HP Download Manager

## File Transfer Protocol (FTP)

For HP Jetdirect devices with firmware versions x.22.xx or later, FTP can be used to upgrade the firmware. However, FTP can only upgrade firmware one device at a time.



Perform the following steps to upgrade firmware via FTP (see Figure 12):

1. FTP to the device from a command prompt:

**ftp <HP Jetdirect IP address>**  
**user: <user ID>**  
(The HP Jetdirect print server will accept all passwords or blanks for the username, so just press Enter)

**password: <administrator p/w>** (The HP Jetdirect print server will accept all passwords or blanks for the password, so just press Enter)

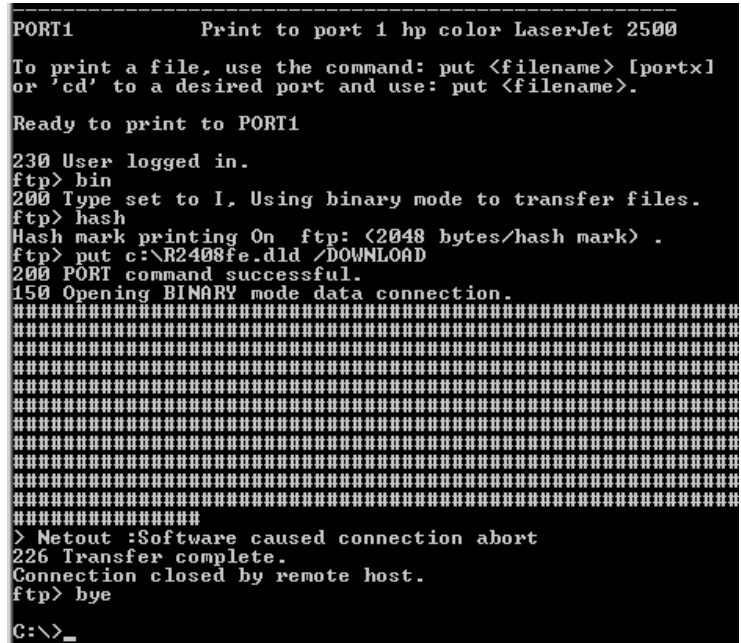


Figure 12 – FTP from DOS Session

2. **bin**
3. **hash** - This command is optional - it will merely show a display of the download progress.
4. **put <filename.dld> /DOWNLOAD** Be sure to type in the full path to the file and be sure to type the filename in correctly. This command is case-sensitive.
5. **bye**

After a couple of minutes, when the FTP session closes, HP Jetdirect should restart and prepare to run the new code. The hash command shows the file transfer in progress, however, no download status can be presented during this period (an FTP restriction).

If a message appears that reads "Netout: Software caused connection abort," simply use FTP again to upgrade the firmware a second time. The new firmware image is complete and functional with only one firmware upgrade. If the second upgrade is not performed, the HP Jetdirect print server uses only English for any of the management interfaces (print control panel menus, EWS, as well as the configuration page). Upgrade a second time to install additional languages.

The firmware upgrade is complete when the message, "Transfer complete" is displayed.

## Using FTP with an Internet browser

Some browsers with FTP folder viewing capability (or enabled in the browser's options) can upgrade an HP

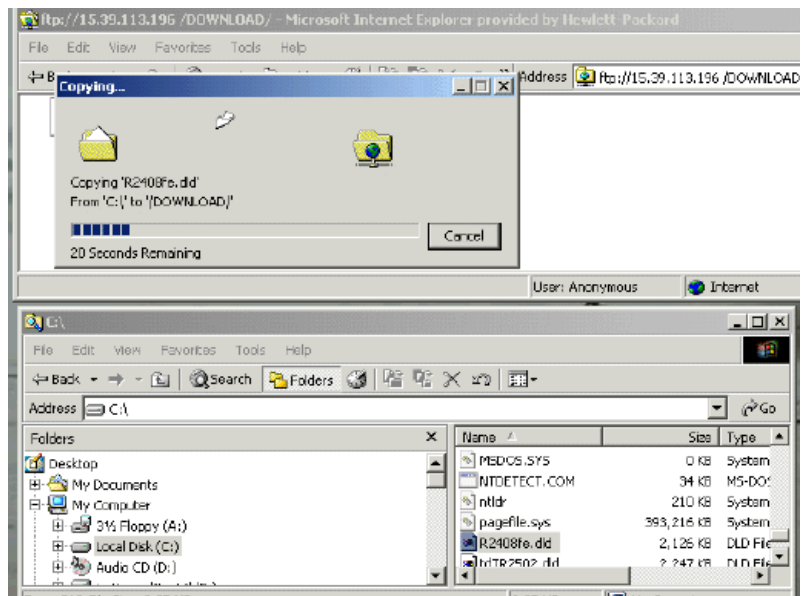


Figure 13 – FTP from Browser

Jetdirect print server (see Figure 13).

Instead of typing `http://` in the browser, begin by typing `ftp://`

Type the IP address of the HP Jetdirect, a space, and `/DOWNLOAD`.

Open Windows Explorer and locate the firmware image file.

Copy and paste or drag and drop the file into the browser window.

Note: If Telnet is disabled, an FTP download is not allowed. If Telnet is enabled and an administrator password is set, the administrator password must be entered at the password prompt, to gain access to FTP download capability. The username prompt can be left blank, or use one of four valid usernames: *root*, *admin*, *administrator*, or *supervisor*.

## Embedded Web Server

If the HP Jetdirect device has firmware version x.24.xx or greater, Embedded Web Server (EWS) can also be used to upgrade the firmware. EWS can only be used to upgrade firmware one device at a time.

EWS can display firmware upgrade files that are available for downloading and perform a firmware upgrade using those files. An Internet connection is required to upgrade the HP Jetdirect firmware using this method.

The EWS provides a link to a page on the HP Web site (<http://www.hp.com>) that lists the download files that are available.

The EWS page lists the model number and firmware version of the HP Jetdirect card. If the wrong file is chosen, the HP Jetdirect card rejects the file as invalid.

Open the Jetdirect EWS by typing the IP address of the HP Jetdirect print server in a Web browser (i.e. "`https://<IP address>`").

Click *Other Settings, Firmware Upgrade*. The model number of the HP Jetdirect card is displayed along with the firmware version that is currently installed on the HP Jetdirect card. Click *HP Jetdirect Firmware Updates* to see the currently available firmware images for HP Jetdirect products.

Download the appropriate firmware file to the computer. Right-click the .DLD file name on the Web site and choose *Save Target as* or *Save as*. Be sure to save it as a .DLD file by selecting *All files* for *Save as type*. (The browser might default to save it as a text file.)

Open the EWS by typing the IP address of the HP Jetdirect print server in a

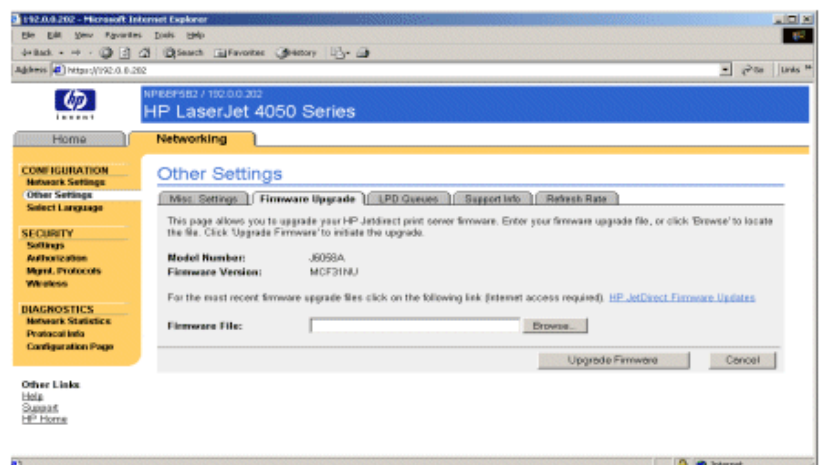


Figure 14 – Embedded Web Server

Web browser. Use the form "https://<IP address>".

Click the *Networking* tab. *Other Settings, Firmware Upgrade.* (see Figure 14)

Click the *Browse* button to find and select the firmware upgrade file. Click *Upgrade Firmware.*

When the upgrade has completed, a success screen will appear

## Summary

HP Web Jetadmin makes downloading firmware images to HP Jetdirect devices and printers easier than ever. The integrated firmware downloader in HP Web Jetadmin can upgrade firmware on any supported platform, and does not rely on a separate download utility to perform the upgrade. HP Web Jetadmin can also automatically locate the latest firmware revisions on the web during the upgrade process. Additional utilities also exist for upgrading HP Jetdirect firmware if the need arises, allowing for more flexibility.